WHAT’S KNOWN ON THIS SUBJECT: The importance of and interest in childhood mental problems have increased worldwide. There are few population studies on child and adolescent mental health and health-related quality of life (HRQoL).

WHAT THIS STUDY ADDS: A social gradient was found in childhood mental health according to maternal education level and social class, but none was found in HRQoL, although children from disadvantaged social classes had somewhat lower HRQoL scores than their more advantaged counterparts.

OBJECTIVES: To assess mental health and health-related quality of life (HRQoL) of children and adolescents in Spain and to investigate the existence of a social gradient in mental health and HRQoL.

METHODS: Within the Spanish National Health Survey (2006), the parents’ version of the Strengths and Difficulties Questionnaire was administered to a population aged 4 to 15 years, and the parents’ version of the modified KIDSCREEN-10 Index was given to a population aged 8 to 15 years. Sociodemographic data and information on family structure, socioeconomic status, health status, and discrimination were collected. Regression models were developed to analyze associations of socioeconomic status with mental health and HRQoL.

RESULTS: A total of 6414 children and adolescents aged 4 to 15 years participated. Mean Strengths and Difficulties Questionnaire score was 9.38 (SD, 5.84) and mean KIDSCREEN-10 Index score (n = 4446) was 85.21 (SD, 10.73). Children whose mothers had a primary school education (odds ratio [OR]: 1.37; 95% confidence interval [CI]: 1.29–1.46) or a secondary education (OR: 1.21; 95% CI: 1.14–1.29) presented poorer mental health than those whose mothers had a university degree. Children from disadvantaged social classes (IV–V) showed slightly poorer HRQoL scores (OR: 0.98; CI: 0.97–0.99) than the remaining children.

CONCLUSIONS: There is a social gradient in the mental health of children and young adolescents in Spain. No social gradient was found for HRQoL, although children from families of disadvantaged social classes had slightly worse HRQoL scores than their counterparts from more advantaged classes. Pediatrics 2012;130:e528–e535

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KEY WORDS adolescent, children, health disparities, mental health, quality of life, Spain

ABBREVIATIONS CI—confidence interval ENSE—Encuesta Nacional de Salud de España (Spanish National Health Interview Survey) HRQoL—health-related quality of life KS—KIDSCREEN OR—odds ratio SDQ—Strengths and Difficulties Questionnaire SES—socioeconomic status TDS—Total Difficulties Score


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Mental health problems are prevalent in childhood and adolescence and represent a considerable burden of disease. They are an important health issue that affects young people’s relationships with family, in school, and with society in general and are associated with intensive use of health and social services. Mental health disorders affect 10% to 20% of the child and adolescent population. Moreover, more than half of the mental health problems in the general population arise in childhood, and there is a continuity between these conditions and those present in adult life.

Considerable effort has been made to standardize assessment of mental health in the general population of children and adolescents. The factors associated with pediatric mental health problems include gender, age, psychiatric disease in the child’s parents, immigrant status, single-parent family, family difficulties, and lower family socioeconomic status (SES), among others. Most population studies on child and adolescent mental health have reported poorer mental health in children with a low family education level or social class. Health-related quality of life (HRQoL) is an important health outcome measure that is being used increasingly in the infantile and juvenile age groups. Its interest lies in the capacity to reflect the multidimensionality of health in both general populations and disease-specific populations. Use of HRQoL as an outcome measure of health status can be useful in daily clinical practice, in effectiveness studies, and as an indicator of the quality of care received. Furthermore, identification of individuals with poorer HRQoL enables early detection of health needs. In the pediatric age, at a time when chronic disease is less prevalent than later in life, systematic use of this measure in community-based studies can enable recognition of neglected groups who may be disadvantaged from the perspective of health and social care. Children from disadvantaged social groups generally achieve poorer scores regarding both mental health and HRQoL.

Social inequalities in child health refer to the health differences between populations of children defined according to their social condition, economic status, demography, or geography. Health inequalities are determined socially and are unfair and modifiable differences. Recent interest in this line has focused on the concept of a social gradient in health; that is, the greater the social disadvantage, the poorer is health. Social gradients in child health have been described for a number of diseases. In 2006, the Spanish National Health Interview Survey (ENSE, Encuesta Nacional de Salud de España) incorporated sections on mental health and HRQoL in the Children’s Questionnaire. The objectives of this study are to determine the status of mental health and HRQoL in the Spanish infantile-juvenile population, to analyze the associated socioeconomic and psychosocial factors, and to specifically investigate the existence of a social gradient in mental health and HRQoL in this population.

**METHODS**

**Sample Selection and Data Sources**

The study information was obtained from the 2006 ENSE Children’s Questionnaire (0–15 years) and the Household Questionnaire. The ENSE is a nationally representative health interview survey conducted every 4 years on behalf of the Spanish Ministry of Health, Social Policy, and Equality. The methods used by ENSE and the database can be accessed through the Web site of the Ministry of Health, Social Policy, and Equality. The current study includes a sample of children and adolescents aged 4 to 15 years in the mental health study and a population aged 8 to 15 years in the HRQoL study.

**Study Variables**

The dependent variables were mental health and HRQoL of the pediatric population. Mental health was assessed by using the parents’ version of the Strengths and Difficulties Questionnaire (SDQ). The SDQ is a 25-item questionnaire that detects probable cases of mental disorder and behavioral disorder in children and adolescents aged 4 to 16 years. It includes 5 scales, containing 5 items: scales measure negative aspects of mental health (emotional symptoms, behavioral problems, hyperactivity, and peer problems), and the single prosocial conduct scale records positive behavior. Each item has 3 possible responses (not true, somewhat
true, or certainly true), and scoring is from 0 to 10. The sum of the scores on the 4 scales related to negative aspects yields the Total Difficulties Score (TDS-SDQ), with a range of 0 to 40. The higher the TDS-SDQ score, the poorer the child’s mental health is.29

Evaluation of HRQoL used the shortest parent-reported version of the KIDSCREEN (KS) instrument, the KS-10 Index. KS is a generic HRQoL questionnaire that has been transculturally developed in 13 European countries for the population of children and adolescents aged 8 to 18 years. The instrument includes 3 versions: KS-52 (52 items and 10 dimensions), KS-27 (27 items and 5 dimensions), and the KS-10 Index, which contains 10 items that score as an index.30 The validity and reliability of KS have been proven in the European population.31 The questions on the KS-10 Index present a recall period of 1 week and a 5-point Likert response scale. In the current study, the version of the KS-10 Index from the European Eurobarometer study was computed to facilitate comparison with that study and with future versions of ENSE. One of the KS-10 items has been replaced by a general health question, while maintaining the psychometric properties of the original version as much as possible. The modified KS-10 Index scores were transformed to a scale of 0 to 100: the higher the score, the better the HRQoL.

The independent variables analyzed included age (3 categories: 4–7, 8–11, and 12–15 years), gender, place of residence (17 autonomous communities and 2 autonomous cities analyzed jointly), place of birth (Spain or outside Spain), and family SES with regard to social class and maternal educational level. Social class was categorized according to the occupation of the home’s main wage earner based on the classification proposed by the Spanish Society of Epidemiology.35 Social Class I includes managerial and senior technical staff and liberal professionals; class II includes intermediate occupations and managers in commerce; class III includes skilled nonmanual workers; class IV includes skilled (IVa) and partly skilled (IVb) manual workers; and class V includes unskilled manual workers. For the study analysis, social classes were grouped into 3 categories: I + II (advantaged), III (middle), and IVa + IVb + V (disadvantaged). The educational level referred to the highest level of schooling completed by the mother, categorized into 3 groups: primary school or less, secondary school, and university degree. The family structure was included in the analysis (single-parent family, 2-parent family, or other), as well as the number of family members: 2 to 3, 4 to 5, or >5 members. The variables related to health and the use of health services included activity limitations (yes/no) in the 6 months preceding the interview, declaration of any chronic condition (yes/no) by using a list of relatively common chronic diseases occurring in the pediatric population, and hospitalizations (yes/no) in the previous year. Lastly, a single question on perceived discrimination was included, asking whether the child had experienced discrimination owing to his or her gender, ethnic group, country of origin, social class, or religion.

**Statistical Analysis**

Mean scores on the TDS-SDQ and modified KS-10 Index were calculated for the overall sample and for each category of the independent variables and were compared by using the t test or analysis of variance, depending on the nature of the variable. To facilitate interpretation of the scores, effect sizes between groups divided according to education level and social class were calculated for the TDS-SDQ and the KS-10. Effect sizes of 0.2–0.5, 0.51–0.8, and >0.8 were considered small, medium, and large, respectively.36 To analyze the influence of context variables on mental health and HRQoL, we had contemplated the use of multilevel analysis, considering the autonomous community of residence as level 2; however, after building the respective empty models, the intraclass coefficient was found to be <3%, and the multilevel approach was rejected. Poisson regression models were used to analyze associations of maternal education level and social class with mental health and HRQoL in the overall sample, because it was the method that best fitted the outcome variables. The final models were adjusted by progressively including variables that were statistically significant in the bivariate analysis while following the proposed conceptual model. That is, the basic (crude) models were initially calculated, and subsequently, the sociodemographic, family, and discrimination variables were included. Health status variables were excluded in the adjusted models for HRQoL. Statistical significance was set at 0.05.

To achieve sample representativeness to national and regional levels in the results, weights were used for each individual. Statistical analyses were performed with SPSS version 18 for Windows (SPSS Inc, Chicago, IL) and the Stata module to estimate variance of complex-sample survey data (version 11; Stata Corp, College Station, TX).

**RESULTS**

A total of 6414 children and young adolescents aged 4 to 15 years were included in the mental health analysis (93.8% of the sample), and 4446 aged 8 to 15 years were included in the HRQoL study (94.8% of the sample). The characteristics of the sample are shown in Table 1. The sample was mainly composed of young people born in Spain (90.3%), living in 2-parent families (89.9%), in social class IV to V (51.6%), and with a secondary school maternal educational level (45.4%). Mean score was 9.38 (SD, 5.84; interquartile range: 5–8).
TABLE 1 Sample Characteristics on Mental Health (TDS-SDQ) and HRQoL Samples (Modified KS-10 Index)

<table>
<thead>
<tr>
<th>Mental Health Sample</th>
<th>HRQoL Sample (Modified KS-10 Index)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
</tr>
</tbody>
</table>

Age, y

4–7 2147 31.4 — —
8–11 2318 33.6 2318 49.4
12–15 2373 34.7 2373 50.6

Gender

Boys 3509 51.3 2430 51.8
Girls 3329 48.6 2261 48.2

Place of birth

Spain 6176 90.3 4248 90.6
Outside Spain 633 9.3 424 9.4

Social class

I 1591 23.2 1048 22.3
II 1612 23.5 1138 24.3
IV 4979 72.8 3439 73.3

Maternal level of education

Primary school 2124 31.2 1554 33.1
Secondary school 3109 45.4 2107 44.9
University degree 1416 20.7 890 19.0

Type of family

Two-parent 5767 9.31 (5.83)
Single-parent 605 11.19 (6.53)

No. of family members

2 or 3 1240 18.1 803 17.1
4 or 5 4979 72.8 3439 73.3
>5 620 9.1 450 9.6

Limitation of activities

No 6233 91.1 4257 90.7
Yes 605 8.9 434 9.3

Chronic condition

No 4887 68.2 3124 66.6
Yes 2086 30.5 1515 32.3

Perceived discrimination

No 6446 94.2 4385 95.5
Yes 327 4.8 261 5.6

Hospitalization

No 6566 96.1 4501 96.0
Yes 273 3.9 189 4.0

Total 6838 100 4691 100

Source: Spanish National Health Interview Survey (2006).27

Effect sizes for mental health and HRQoL according to the family level of education and social class are shown in Table 3. The largest effect size for TDS-SDQ scores was observed between children from families with a primary level of education and those from families with a university degree (0.52).

The multivariate analysis of mental health and HRQoL is shown in Table 4. There was a statistically significant social gradient for mental health in both maternal level of education and social class. Higher scores (poorer mental health) were seen in children from more disadvantaged families: children of mothers with a primary school education (odds ratio [OR]: 1.37; 95% confidence interval [CI]: 1.29–1.46) and those of mothers with a secondary school education (OR: 1.21; 95% CI: 1.14–1.29) had worse mental health status than those whose mothers had university degrees. Similar results were seen for social class: children from social class III (middle; OR: 1.15; 95% CI: 1.08–1.22) and those from the more disadvantaged classes (IV–V; OR: 1.31; 95% CI: 1.24–1.38)
had worse mental health status than those from advantaged social classes. This social gradient persisted after adjusting for several variables related to sociodemographics, family, health, and discrimination. Maternal primary education (OR: 0.99; 95% CI: 0.97–1.01), and secondary education (OR: 0.00; 95% CI: 0.98–1.01), the minimal differences in HRQoL in socioclass, although statistically significant, do not seem to be relevant from the clinical and epidemiologic viewpoints.

The mental health results found in this study are in keeping with those of previous European and international studies. The youngest children and those from single-parent, immigrant, and disadvantaged families had worse mental health scores. Similar findings were obtained in the recent Catalan Health Survey, which also showed a clear social gradient as determined by family social class and mother’s educational level. The adult population in families with a low level of education or disadvantaged social class presents higher morbidity rates and chronic physical and mental conditions. These circumstances could limit their economic resources and the available time for parenting activities and caring for their children. The lower income might also limit the children’s access to educational and social activities.

Effect sizes found for the association of maternal level of education and social class and mental health were low to moderate, although they represent at least the minimal important difference according to international consensus. Moreover, policy makers and clinicians should be aware of the magnitude of social inequalities in mental health. The mental health of >1 million Spanish children aged 4 to 15 years would improve by a medium to large difference on the TDS-SDQ (effect size, 0.52) if they achieved the same mental health status as children from families in the highest educational category.

With respect to HRQoL, the results of this study concord in great part with those reported by other authors, however, we found minimal differences in HRQoL according to social class and no differences according to maternal education level. The absence of differences according to maternal level of education found in the current study may be partly explained by differences in the study methods and instruments used. For example, the European Health Behavior in School-aged Children 2005/2006 Survey.

## Table 3: Standardized Mean Differences (Effect Size) for Mental Health (TDS-SDQ) and HRQoL (Modified KS-10 Index) According to Social Class and Maternal Level of Education

<table>
<thead>
<tr>
<th>Social class</th>
<th>TDS-SDQ, Effect Size (95% CI)</th>
<th>Interpretation</th>
<th>Modified KS-10 Index, Effect Size (95% CI)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV–V versus III</td>
<td>0.27 (0.21 to 0.33)</td>
<td>Moderate-low</td>
<td>0.12 (0.04 to 0.19)</td>
<td>No effect</td>
</tr>
<tr>
<td>IV–V versus I–II</td>
<td>0.47 (0.41 to 0.53)</td>
<td>Moderate-low</td>
<td>0.12 (0.05 to 0.20)</td>
<td>No effect</td>
</tr>
<tr>
<td>III versus I–II</td>
<td>0.21 (0.14 to 0.28)</td>
<td>Moderate-low</td>
<td>0.01 (0.00 to 0.01)</td>
<td>No effect</td>
</tr>
<tr>
<td><strong>Maternal level of education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school versus secondary school</td>
<td>0.2 (0.14 to 0.26)</td>
<td>Moderate-low</td>
<td>0.02 (0.00 to 0.03)</td>
<td>No effect</td>
</tr>
<tr>
<td>Primary school versus university degree</td>
<td>0.52 (0.45 to 0.59)</td>
<td>Moderate-high</td>
<td>0.04 (0.00 to 0.12)</td>
<td>No effect</td>
</tr>
<tr>
<td>Secondary school versus university degree</td>
<td>0.32 (0.25 to 0.38)</td>
<td>Moderate-low</td>
<td>0.01 (0.00 to 0.01)</td>
<td>No effect</td>
</tr>
</tbody>
</table>

Source: Spanish National Health Interview Survey (2006).27

* Adjusted by age, gender, place of residence, place of birth, type of family, no. of family members, discrimination, and health status (health status variables were not included in the HRQoL models).

## Discussion

In this study, a social gradient was found for childhood mental health according to the maternal education level and family social class. Children born to disadvantaged families presented poorer mental health. This social gradient was not found for HRQoL; however, children from families of social classes IV to V showed slightly poorer HRQoL scores than their counterparts from more advantaged classes. The minimal differences in HRQoL according to social class, although statistically significant, do not seem to be relevant from the clinical and epidemiologic viewpoints. The mental health results found in this study are in keeping with those of previous European and international studies. The youngest children and those from single-parent, immigrant, and disadvantaged families had worse mental health scores. Similar findings were obtained in the recent Catalan Health Survey, which also showed a clear social gradient as determined by family social class and mother’s educational level. The adult population in families with a low level of education or disadvantaged social class presents higher morbidity rates and chronic physical and mental conditions. These circumstances could limit their economic resources and the available time for parenting activities and caring for their children. The lower income might also limit the children’s access to educational and social activities.

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REFERENCES


38. Borrell C, Rue M, Pasarín MI, Rohlf I, Ferrando J, Fernandez E. Trends in social class inequa-

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